CLAIMS

1. A method for energy management, in particular for the energy management of the on-board electrical system of a vehicle with a generator, at least one energy store and consumers which can be divided up into a plurality of classes, with the following steps:

determination of the condition of the generator and energy stores (s) (S1),

definition of the energy available in a subsequent time interval Δt from the determined condition data of the generator and energy store(s) (S4),

reception of activation requests from consumers for the subsequent time interval Δt (S5),

determination of the energy required in the subsequent time interval Δt on the basis of activation requests (S6),

checking whether the required energy is greater than the available energy (S7),

if the available energy is sufficient,

fulfillment of all activation requests of the consumers in the subsequent time interval (S8), or

if the available energy is not sufficient, selection of the consumer(s) to be activated in the subsequent time interval Δt according to the energy available and a priority and tolerance time (T_L) of the corresponding consumers (S9).

2. The method for energy management as claimed in claim 1, characterized in that the selection of the consumer(s) to be activated in the subsequent time interval Δt comprises the following steps:

reduction of the minimum activation period of activated, pre-emptive consumers by a time interval Δt

(S9-0),

checking whether non-switchable consumers are requesting activation (S9-1),

if so, checking whether the available energy is sufficient for all non-switchable consumers requesting activation (S9-2),

if the energy is not sufficient, de-activation of pre-emptive consumers in the subsequent time interval Δt (S9-3) and setting of a tolerance time (T_L) of the deactivated, pre-emptive consumer(s) in the subsequent time interval to a maximum tolerance time ($T_{L,max}$) (S9-4), then similarly in the event that the available energy is sufficient for all non-switchable consumers requesting activation, activation of the conditionally switchable consumer(s) requesting activation in the subsequent time interval Δt (S9-5),

if no non-switchable consumers are requesting activation or, following activation of the non-switchable consumer(s) requesting activation, checking whether energy is still available (S9-6),

if so, checking whether consumers of different classes that are switchable and conditionally switchable in the subsequent time interval are requesting activation in the subsequent time interval (S9-7),

if so, setting of a tolerance time (T_L) of each consumer requesting activation in the subsequent time interval to a maximum tolerance time ($T_{L,max}$) (S9-8), and of a hitherto unselected consumer requesting activation with the highest class and the lowest tolerance time (T_L) until no more energy is available (S9-9, S9-10),

checking whether activated, pre-emptive consumers with a minimum activation period equal to or less than zero are available (S9-11),

if so, de-activation of one or more of these consumers until the energy is sufficient or all

consumers of this type are deactivated (S9-12), then setting of the tolerance time (T_L) to a maximum tolerance time ($T_{L,max}$) and setting of the consumer status from "activated" to "waiting for activation" (S9-13),

checking whether energy is still available (S9-14), and, if energy is still available (S9-14), returning to step S9-9,

if no more energy is available, or if no activated, pre-emptive consumer with a minimum activation period equal to or less than zero is available,

activation of the selected consumer(s) in the subsequent time interval (S9-15) and setting of the tolerance time (T_L) of this/these consumer(s) in the subsequent time interval Δt to 0 (S9-16), and,

if the activation is carried out or it has been established that no more energy is available for activation of switchable consumers, reduction of the tolerance time (T_L) of consumers not yet activated but waiting for activation by Δt (S9-17).

3. The method for energy management as claimed in claim 2, characterized, if no switchable consumers are requesting activation or the tolerance time (T_L) of consumers not yet activated but waiting for activation has been reduced, by checking whether the tolerance time (T_L) of at least one of the consumers requesting activation but not yet activated is equal to or less than 0 (S9-18), and,

if not, returning to the start, otherwise switching over to an emergency operation I (S9-19), in which the entire class of this consumer is deactivated for a predefined time period (t_1).

4. The method for energy management as claimed

in claim 2 or 3, characterized in that steps S9-11 to S9-14 are carried out only for class II consumers requesting activation.

5. The method for energy management as claimed in one of claims 2 to 4, characterized in that the maximum tolerance times ($T_{L,max}$) can be changed dynamically during driving operation.

6. The method for energy management as claimed in claim 4, characterized in that the maximum tolerance times ($T_{L,max}$) can be changed depending on driving conditions.

7. The method for energy management as claimed in one of claims 1 to 5, characterized in that it is additionally established on the basis of the determined data relating to the condition of the generator whether the generator is running (S2) and, if so, the procedure involving the definition of available energy continues, otherwise switchover takes place to an emergency operation II (S3), in which all switchable consumers are deactivated (S3-1) and the driver is then prompted to stop the vehicle (S3-2).

8. The method for energy management as claimed in one of claims 1 to 6, characterized in that the consumers can be divided up into classes dynamically during driving operation.

9. The method for energy management as claimed in claim 7, characterized in that the dynamic division of consumers is dependent on external factors.